

REMARKS

Claims 1, 3-5, 7-14, 17, 20, and 21-40 are now pending in this application. Claims 21-40 are newly added. Claims 1, 21, and 31 are the independent claims.

Rejections Under 35 U.S.C. § 103(a)

The Examiner has rejected claims 1, 3-5, 7, 8, 13, and 14 under 35 U.S.C. § 103(a) based on Schlyer et al. (U.S. patent 5,917,874) in view of Zeisler et al. (U.S. application 2005/0201504). Schlyer does not disclose or suggest an elongated cavity that is longer in a direction parallel to the particle beam that irradiates the target than in a direction perpendicular to the particle beam. As shown in Fig. 2 of Schlyer, which is reproduced below for convenience, the device of that patent has a shallow reservoir (26) with a width that is greater in a direction perpendicular to the particle beam (20) than the depth in a direction parallel to the direction of the particle beam.

Fig. 2 of Schlyer et al. - U.S. Patent No. 5,917,874

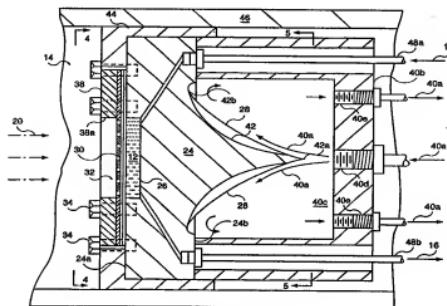


FIGURE 2

The structure of the shallow reservoir in Schlyer is intentional:

In accordance with another advantage of the present invention, the depression 26 illustrated in Fig. 3 is preferably very shallow in depth for allowing the particle beam to irradiate substantially all the sample 12 therein to produce the radioisotope....Since the depression 26 is very shallow, the amount of heat input into the sample 12 is thereby limited. And, such heat is conducted away from the depression 26 rearwardly through the body 24 as well as forwardly and laterally through the foil 30 and grid 32 in a circuitous path back into the front side of the body 24.

(Schlyer column 3 line 57 through column 4 line 12). Therefore, Schlyer does not disclose the type of elongate cavity claimed, and actually teaches away from using that type of an elongate cavity.

Furthermore, Schlyer does not suggest or teach providing a removable metallic insert comprising at least two separate metallic parts of different materials. Schlyer is silent as to the composition of the housing (40(b)), and there is nothing in the disclosure that suggests any benefit from having a removable metallic insert comprising at least two separate metallic parts of different materials.

The Examiner cites Zeisler for disclosing the use of niobium as a material for forming an absorbing material housing a cavity, a cooling jacket that comprises stainless steel, and an elongate cavity of at least 50 mm. The structure of Zeisler is shown below in Fig. 1 from the reference:

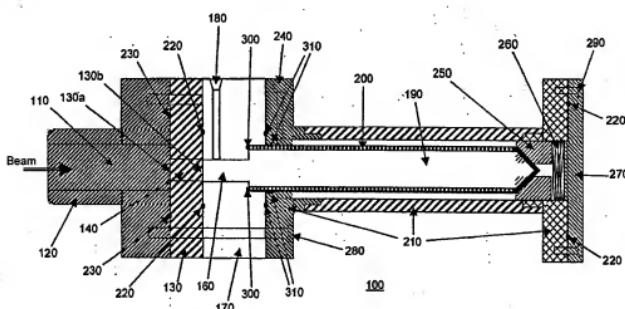
Fig. 1 of Zeisler et al. - U.S. Patent Application Publication No. 2005/0201504A1

FIG. 1

Even if one were to modify Schlyer with certain aspects of Zeisler (such as particular materials), Schlyer teaches the person of ordinary skill in the art to avoid modifications to the length of the shallow cavity, so that the modified Schlyer device would not have an elongate cavity that is longer in a direction parallel to the particle beam than in a direction perpendicular to the particle beam. Although both references relate to irradiation cells, the structures of the two devices are fundamentally different, and this is not an instance where one part may be simply substituted for another. The structure of Schlyer, including the configuration and placement of the cooling fins 28 and housing 40(b), is specifically designed for use with the shallow depression 26 for holding the material to be irradiated. As noted above, the shallowness of the depression 26 is important to the design of Schlyer. The shallowness of the depression is intended to increase the irradiation of the target material, and the heat applied to the shallow well is limited. (Schlyer column 3 line 57 through column 4 line 12). Cooling

mechanisms shown in Schlyer are specifically designed to cool the type of target body shown, which has a shallow depression for the target material, and heat dissipates from the target body of Schlyer rearwardly through the cooling fins, forwardly, and laterally (Id.). Due to the specific design of Schlyer and the significance of the shallow depression or reservoir to that design, one of ordinary skill in the art would have no reason to modify the structure of Schlyer in order to provide a longer cavity, and in fact would be discouraged from doing so. Therefore, claim 1 is not obvious in view of the prior art.

Since claims 3-5, 7-14, 17, and 20 all depend from claim 1, they are non-obvious for at least the reasons discussed above.

New Independent Claims 21 and 31

Independent claims 21 and 31 have been added by this amendment. Neither these claims nor those claims that depend from them are obvious in view of the prior art. The prior art does not show a removable metallic insert that comprises at least two separate metallic parts of different materials, being composed of at least a first part and a second part, the first part comprising a material selected from the group consisting of niobium and tantalum and forming a cavity that is elongate in a direction parallel to the particle beam that irradiates the target, and the second part being a generally cylindrical hollow member comprising a material selected from the group consisting of stainless steel, silver, and titanium, with the second part disposed around at least a portion of the elongate cavity of the first part and the first and second parts forming a channel which guides a cooling medium. Therefore, claim 21 and its dependent claims are not anticipated or obvious.

The prior art also fails to disclose a removable metallic insert comprising at least two separate metallic parts of different materials, being composed of at least a first part and a second part, the first part having an elongated cavity that is longer in a

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direction parallel to the particle beam that irradiates the target than in a direction perpendicular to the particle beam, and the second part surrounding the first part and forming a channel configured to guide a cooling medium in a direction parallel to the direction of the beam and perpendicular to the direction of the beam so that the cooling medium surrounds the cavity. Therefore, claim 31 and its dependent claims are not anticipated or obvious.

Conclusion

For the foregoing reasons, it is respectfully requested that claims 1, 3-5, 7-14, 17, 20, and 21-40 be allowed to pass to issue.

The Commissioner is hereby authorized to charge any additional fees which may be required with respect to this communication, or credit any overpayment, to Deposit Account No. 06-1135.

Respectfully submitted,

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